Chapter 4
Physical Literacy and the Primacy of Movement

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Len was passionate about the inherent nature of movement and human development. In his research he came across the concept of the primacy of movement and championed its usefulness in substantiating the value of physical literacy. In relation to this he was also very interested in the neuroscientific research that related to the monist characteristics of human nature. In 2017 Len in collaboration with Elizabeth wrote the following article for PE Matters. After this article a reflection discusses the history of the move from dualism to monism and then how the primacy of movement, as highlighted to us by Len, has been significant in promoting the development of physical literacy.

Physical Literacy and the Primacy of Movement: Implications for Early Years.
***Len Almond and Elizabeth Myers* (2017) *Physical Education Matters.* 12(1) P19-21**

Introduction

The concept of physical literacy is now being seriously considered across the globe and is becoming readily accepted in some countries worldwide. In particular over the last two years Canada, Australia and USA have seen a major interest in the notion of physical literacy with the publication of many new documents outlining its relevance. Within these countries physical literacy has become a new slogan for change, yet close analysis of these published documents supporting this position raise many questions regarding the understanding and interpretation of physical literacy. These new documents appear to be "old wine in a new bottle", a slogan, with a literacy label, that carries a message of respectability and significance. As Jurbala (2015) states, the concept of physical literacy can be employed to stimulate interest in participation in physical activity, but simply using the term physical literacy to stimulate interest whilst not fully understanding the concept has the potential to significantly damage the cause in the long run.

This recent and sustained interest from a number of countries worldwide has failed to recognise the conceptual framework that underpins the idea and many people simply see it as another name for physical education. In addition, there is a tendency to ignore a key aspect of children and young people's early development – the early years (babies to pre-school) – and the richness and depth of its relevance to future participation in culturally valued physical pursuits and optimal holistic development. The early years of life tend to be overlooked in policy documents, which appear to focus only on age 5-18. In addition, policy documents have been slow to recognise and respond to the UK Physical Activity Guidelines for Early Years and use them as a stimulus to reduce the scandalous case of 91% of young children failing to meet these guidelines. If this happened in other age groups, it would be seen as a major disaster. Another common misconception is that physical literacy is being interpreted as fundamental movement skills or purely physical competency, this failure to acknowledge the holistic nature of physical literacy demonstrates a clear lack of understanding essential in order to embody the concept in both policy and practice.

It is this position that has prompted a group of physical literacy advocates to focus their attention on the early years as a starting point for rethinking what it entails and using this work to build a progressive developmental framework for consideration within the profession. Therefore, this article will outline two areas that we need to explore in more detail – the primacy of movement and self-regulated learning.

Primacy of movement

The moving body is essentially how we experience the world in which the roles of perception and cognition play a big part. Self-movement is fundamental to life and its meaning. This is why we need to examine seriously how it is that babies who cannot walk or talk are able to become toddlers who can do both. From infancy we are all involved in self-organised and self-regulated learning in developing our movement capabilities and in the interrelationships of movement and meaning. Humans are attracted to movement from when we are born, we have a curiosity and a desire to move, to not only make sense of the world but also to be able to interact and engage within it.

A child moves regularly to energise their life, build robustness, vitality and dynamism without which the child would not be able to sustain their very active lifestyle. The child's urge to move provides the very source of their capacity for optimal development and the enhancement of their health. This is a point in which all adults can learn a significant lesson – moving regularly generates a source for being energetic and a sense of vitality and dynamism. Also, the child's exploration of their world through movement and their efforts at making sense of this world provide the ideal platform for them to learn ways in which they can enrich their lives. This early development in relation to a child exploring the world through movement and enriching its life by moving is the very first step in developing a disposition whereby an individual may become physically literate. As Whitehead states (2010, p.13) "*[physically literate] individuals will have a well-established sense of self as embodied in the world. This together with an articulate interaction with the environment".* Therefore, to be embodied is to have the capacity to interact effectively within and with the environment and make sense of oneself within ones' environment, this is something that is an innately human capacity as babies themselves without instruction begin their own embodied development by exploring the world through movement.

Neuroscience and the primacy of movement

This position is supported by recent thinking in neuroscience where Wolpert and Moravec's paradox have challenged current ideas.

Daniel Wolpert[1] (University of Cambridge) tells us:

[1] The important work of Wolpert can be seen on the following resources:
https://www.cam.ac.uk/research/news/the-man-with-the-golden-brain ,

https://www.cam.ac.uk/research/news/a-move-towards-understanding ,

> *"We have a brain for one reason and one reason only - that's to produce adaptable and complex movements. Movement is the only way we have of affecting the world around us... I believe that to understand movement is to understand the whole brain. And therefore it's important to remember when you are studying memory, cognition, sensory processing, they're there for a reason, and that reason is action".*

Moravec's paradox is the discovery by artificial intelligence and robotics' researchers argue that, contrary to traditional assumptions, high-level reasoning requires very little computation, but low-level sensorimotor skills require enormous computational resources. The principle was articulated by Hans Moravec (whence the name of the paradox) and others in the 1980s.

Hans Moravec (1998) makes a very telling point when he explains that:

> *"Encoded in the large, highly evolved sensory and motor portions of the human brain is a billion years of experience about the nature of the world and how to survive in it. The deliberate process we call reasoning is, I believe, the thinnest veneer of human thought, effective only because it is supported by this much older and much powerful, though usually unconscious, sensorimotor knowledge. We are all prodigious olympians in perceptual and motor areas, so good that we make the difficult look easy. Abstract thought, though, is a new trick, perhaps less than 100 thousand years old. We have not yet mastered it. It is not all that intrinsically difficult; it just seems so when we do it."*

When we examine the significance of these statements and consider how babies are able to learn to walk (and talk) through their own efforts because they move to explore, move to learn (and learn how to learn) and move to make sense of their world, it raises important questions that should challenge our conception of learning and acquisition of complex movement patterns and synergies in young children. Children have always explored their movement potential in different environments accessible to them and in this self-directed world they acquired behavioural flexibility within the freedoms they were allowed and the opportunity (without adults) to make decisions on their own. They are acquiring a movement capability that can enrich their lives, have a major impact on brain development and at the same time energised their lives. There is a unity of mind, body and emotions, very different from the dualism of Physical Development in the early years and Physical Education thinking.

From this position we would argue that there is an urgent need to absorb this thinking about the primacy of movement in children's lives and carefully consider its relevance in how we work with young children in early years settings. Babies, toddlers, pre-school and reception children represent a wide range of very different needs therefore we need to carefully consider

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https://www.ucl.ac.uk/news/slms/slms-news/neuroscience/12032902-queen-square-symposium-interview

how we build on children's emerging movement capabilities. This requires the development of environments that can facilitate the widening and enrichment of experiences and provide a platform for future developments in a wide range of contexts and the acquisition of complex movements, competences and meaningful experiences. As Whitehead (2010) argues movement competency can be facilitated by encouraging fluent interaction with a wide range of environments. Therefore, it is important we as adults consider what environments are made accessible and how we can encourage and facilitate fluent interaction for children within these range of environments.

What does this mean for Physical Education?

In the first instance, the primacy of movement is our starting point – a platform for development - from which we can begin the journey of creating a coherent and progressive range (across the whole school age) of experiences that open up infinite possibilities for engaging in purposeful physical pursuits with the ultimate aim of becoming physically literate and maintaining this disposition throughout life.

The early years provides the platform for five distinct areas to emerge and consider as potential sources for articulating a vision and sense of direction for physical literacy:

- Acquiring a Movement capability
- Valuable 'beings and doings'
- Culturally valued pursuits
- Energising lives
- Enriching lives

However, we need to pose a number of questions because these labels are relatively new to most people and there is a need to develop a clear understanding of:

- What do they entail?
- What are these 'beings and doings?
- What counts as culturally valued pursuits"
- What does energising lives imply?

How can we use these labels to identify relevant purposeful pursuits that are developmentally appropriate and attractive to young people's interests and have the potential to open up avenues for acquiring valuable 'beings and doings' and have great cultural depth and richness? In this process provide opportunities also for [people to energise their lives and enrich living.

Clearly, we cannot use secondary education as our guide as this needs to follow on and not instead be extrapolated down. There is a massive range of 'action possibilities' therefore to make informed choices requires an understanding of different phases of children's development and access to quality research that illustrates potential. In addition, it is vital that this process is centred on a shared understanding of the task and its outcomes and we avoid vested interests and uninformed preferences. We need to approach movement development

from a divergent perspective whereby multiple possibilities are encouraged as individuals develop through an initially self-regulated process that is driven by a unique and individual curiosity for movement in a range of different environments.

Our preferences is to utilise the early years as a platform and undertake a project with reception and key stage 1 children and demonstrate what can be achieved. This is currently happening as part of a Physical Literacy project (phase 2 – reception and key stage 1) and its results will be made available early in this New Year. At this point phase 3 (key stage 2) will begin.

This brings us to the second part of this article. The primacy of movement is associated with a different way of learning from both primary and secondary education, which is mainly adult directed. At the present moment there are strong moves to ensure that reception and key stage 1 settings embrace this approach. Yet, the evidence from babies and young children suggests that other forms of learning are powerful and deserve serious consideration because they target other capabilities and attributes other that achievement in exam results and other forms of assessment based on a specified curriculum. An achievement-based curriculum based on tests creates new inequalities. Our diverse and changeable world is not like this and to succeed in this world requires attributes and capabilities that are not being catered for and largely ignored. This is a situation that required serious debate. We must stop viewing infancy from an adult perspective and understand what infants needs from their perspective in order to develop most effectively.

Self-regulated learning[2]

Emerging from a consideration of the primacy of movement is the central driving force of children's self-regulated behaviour starting with their learning to move, moving to learn and moving for enjoyment, which is associated with a form of emotional attachment worth the experience. This behaviour represents a major aspect of their development, yet its significance tends to be overlooked. It forms the basis for empowerment, agency and independence.

If empowerment, responsibility, agency and independence are seen as important aspects of education then we need to seriously pose the question why is it that self-regulation from babies learning how to learn and being agents of their own development tends to be replaced by directed learning?

1. Babies learning to learn and how to move with purpose ⟶ self-regulated learning and responsibility ⟶ empowerment/agency and autonomy.

2. Facilitated learning

- ❖ Planned
- ❖ Provides a focus
- ❖ Sets up enriching environments
- ❖ Provides affordances and scaffolding opportunities

[2] Self-regulation – We prefer this term at present because it implies more than self-directed

- Opportunities for observation of learning
- Opportunity to identify developmental delay
- Modelling/demonstration

3. Directed learning

What is the educational priority (as opposed to efficiency priority)? What is the value of each approach? What is essential in directed learning? Does it add an important dimension?

Advantages:

- Purposeful
- Focussed
- Modelling/demonstrating
- Scaffolding
- Encouraging
- Differentiated
- Further children's thinking

In both facilitated learning and directed learning, it is possible that practitioners may use only a narrow focus, display negative reactions to children's work, pose too many questions (at home children ask the questions whereas in settings it is the practitioners who ask the most questions), interfere with children's ideas, intervene to often and children become more passive.

What is the educational priority (as opposed to efficiency priority)? What is the value of each approach? What is essential in directed learning? Does it add an important dimension? It also isn't just babies that are able to learn important tasks without adult supervision or guidance. For example, the list below illustrates that young people are able to develop highly sophisticated capacities without adult supervision.

- Skate boarders and Long boarders
- Street-dance (with its multiple styles)
- Gamers playing electronic games
- Brazilian boys learning to play football
- Young people learn to play a musical instrument without being taught
- Games making or inventing their own games

We need to consider the gradual process of emerging empowerment, independence and agency as `central to how we nurture children's learning path. There is a need for an urgent debate about the role of self-regulated learning, facilitated learning and the relevance of direct learning in the process of children and young people's development. This discussion highlights a a somewhat larger question that asks what is the purpose of education? Directed learning can be possibly more aligned with pre-defined knowledge transfer whereas facilitated learning and self-regulated learning is more concerned with the exploration of the world and how to exist, respond, interact within it. This highlights the schooling vs education debate about whether we

are teaching children for tests or adulthood, is education concerned with process or product?

Final thoughts

Human development in the early years is an incredibly intricate process. Previous dualistic efforts to understand this process has failed to appreciate the intricate and holistic nature of human development, therefore a more monist, inclusive and holistic approach is required to make sense of this significant time and understand how to encourage development during this time.

Central to development during the early years is movement, it is something that happens independently and innately without instruction. This highlights the primacy of movement as a tool for humans to make sense of, interact with and develop the movement capability essential in becoming effective adults. As educators we must embrace the notion of the primacy of movement and self-regulated learning and provide opportunities whereby meaningful interaction can take place naturally nurturing these innate behaviours.

Finally, we have introduced suggestions for developing a progressive programme based on an early year's platform for providing a new vision and sense of direction for physical literacy to encompass attributes and capacities that are currently neglected within physical education. These will be developed in more detail in a new article but by highlighting them now we are providing opportunities for practitioners to explore first of all their own interpretations of what these might entail and what are their implications for physical education.

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On reflection

In the paper above Len and Elizabeth refer to monism and the unity between mind, body and emotion. They also mention the way that neuroscience is moving forward in understanding aspects of movement. In respect of working with early years children mention is made of the nature of physical development and the environments that can stimulate this progress. The pieces that follow pick up and develop aspects of these ideas. Firstly the growing acceptance of monism is narrated and then issues in early years development are considered.

Attitudes to dualism and monism

In his reading and writing Len was quick to pick up developments in relation to attitudes towards dualism and monism and the formulation of new theories such as 'Essentially

Embodied Existence' and 'Enactivism'. Monism lies at the heart of physical literacy and so it was important that we followed Len's lead and investigated these new ideas. This initiated a re-evaluation of the gradual move away from dualism towards monism in the Western world. The piece below charts these changes. Of necessity this reflection will have to be something of a whistle stop tour, however in and of itself this reflection has spurred us on to further study.

So, stimulated by Len's work we would like to share with readers our fascination with the role of human embodiment in the context of monism. Firstly, we refer to the earlier work of Sartre and Merleau-Ponty and then touch on the views of others such as Gibson, Gibbs, Clark, Leder, Polanyi and Lakoff and Johnson. Finally, we outline the most recent thinking of writers such as Maiese, Varela, Thompson and Rosch.

The roots of dualism can be found in the work of Descartes who asserted in the 19th century the famous quote 'I think, therefore I am'. This followed from his reasoning that the mind is the only element of himself about which he can be 100% certain. All other aspects of his human nature, including his embodiment, could be subject to doubt as to his being or reality. As a result of these views human embodiment was assigned to a subsidiary role in life. The only value of human embodiment was therefore, to ensure the continued existence of a working mind. Western cultures accepted this view as the truth and this opinion has become a real challenge to refute. For example, Leder (1990) expresses regret that the stranglehold of dualism has resulted in our being trapped inside a picture - a dualist picture that has limited our self-development and self-realisation. And Sheets-Johnston (1994) is forthright in her view that the Cartesian legacy has in essence reduced the body by turns to a static assemblage of parts and to a dumb show of movement.

However, there has been a growing scepticism concerning Descartes' view and dualism from philosophers, cognitive scientists and neuroscientists. For example, in the mid-20th century both Sartre and Merleau–Ponty (1962) cast doubt on dualism. Sartre (1957) wrote that 'For human reality, to be is to act' and Merleau-Ponty expressed the view that 'existence (is) a perpetual incarnation'. Both philosophers were in the vanguard of questioning dualism. A view expressed by many since the turn of the century is that far from the body relying on the mind to organise and plan embodied action, the mind relies on the human embodied dimension to develop a coherent understanding of, and relationship with, the world. For example, Burkitt (1999) writes that prior to the Cartesian 'I think', there is an 'I can' – a practical cogito which structures not only our relationship to the world, but also the ways in which we think about it. Similarly, Gibbs (2006) expresses the view that the traditional disembodied view of the mind is mistaken, because human cognition is fundamentally shaped by embodied experience.

Other thinkers have continued to develop this idea and argue that, not only are our mental capabilities reliant to a considerable extent on our embodied nature, but that human reality is significantly realised in the context of our embodied nature. Lakoff and Johnson (1999) write that for real human beings, the only realism is embodied realism and similarly Burkitt (1999) states that the basis of meaning is not to be located in the rules that order cognition, nor in the grammatical structure of linguistic sentences, but in the bodily pattern and order of active

perceptions. Taking a related stance Leder (1990 p17) stresses that perception is not purely a cognitive exercise. He describes all human experience as incarnated and argues that what is perceived is always saturated by the implicit presence of motility.

Some writers propose that the body is at the core of existence. For example, Gill (2000 p45) explains that 'the body is the pivot point of human existence in the world' and again (p 97) that 'our body is the entry point into the world, the medium through and in which our reality is constituted'. Other thinkers do not go as far as this but underline the significant role played by human embodiment in the development of knowledge, rationality and language. These notions are not straightforward as the contributions made to these areas of human potential operate below the level of consciousness. Nietzsche (1885/1971 p61/62) signals this by writing that **'**The body is a great intelligence… Behind your thoughts and feelings, my brother, stands a mighty commander, an unknown sage - he is called Self. He lives in your body, he is your body.' This position is developed at length by Polanyi who introduced the notion of tacit knowledge. This knowledge can be described as an appreciation and understanding of the way that our embodied nature retains, stores and uses extensive knowledge about the world and how, as humans we can interact effectively in our environment. This pre-reflective knowledge is a feature of the lived-body, although it is often associated with the living body.

The living body is that mode of the body which, as conscious humans, we can 'divorce' from ourselves and stand back from and describe, consider and train. The lived body is that mode of embodiment which Merleau-Ponty describes as passed over in silence, as we humans navigate and relate to the world around in everyday life. Gill (2000 p54) reports Polanyi's view that, because 'tacit knowledge is the anchor or tether for explicit knowing, it necessarily follows that we always know more than we can tell' or for that matter articulate.

This reference to Polanyi's work opens the next chapter of theories of monism, this being that tacit knowledge is the essential forerunner of explicit knowledge. For example, Gill (2000 p54) explains Polanyi's views which include the assertion that 'tacit knowing is logically prior to explicit knowing and hence is the fulcrum or axis from which the latter acquires its possibility and significance. This view is built on by Johnson (2007) and Lakoff and Johnson (1999). These writers argue that embodied experience is the root of rationality and language. It is worth quoting from the work of Lakoff and Johnson (1999 p82) to clarify this point. They write:

> The vast majority of our concepts, systematic mechanisms, and other cognitive structures operate for us automatically and unreflectively.... for the most part, our conceptual systems operate, as they must, beneath the level of consciousness. The body is crucial at this level, because all of our cognitive mechanisms and structures are grounded in patterns of bodily experience and activity, such as our spatial and temporal orientations, the patterns of our bodily movements, and the ways we manipulate objects. Mental images, image schemas, metaphors, metonymies, concepts, and

> inference patterns are all tied, directly or indirectly, to these bodily structures of our sensori-motor activities.

Lakoff and Johnson (1999) also go to great lengths to explain how language and rationality depend on embodied pre-reflective experience. As explained in Whitehead (2010) they argue 'that concepts such as up, down, above, below, near and far are not grasped until the corresponding interaction with the world via our embodied dimension has been experienced. And again, far from aspects of movement appreciation being foreign to our language, our speech is imbued with movement metaphors. Individuals talk of being *weighed down* with responsibilities, having *close* friends, feeling *down* when they are depressed and describing a colleague's understanding of a subject as *way ahead* of their own. All the words in italics are metaphors based on movement experiences. Others who support the foundations of language in embodied interaction with the world include Nathan in De Vega (2008 p412) who wrote 'Everything in language comprehension is embodied, not only the meaning of the words, but also the representations of words themselves.' In addition, there is a good deal of writing about the way that human embodiment is the ground for many aspects of human nature. For example, discussions abound concerning, inter alia: Rationality, Reason, Conceptualisation, Understanding can be found in Weiss and Harber (1999); Cognition in Varela et al (1993 p172); Meaning in Nathan in De Vega (2008 p425); Perception in Leder (1990 p17); Mindedness and Sense Making in Maiese (2016).

As can be seen there has been a gradual acceptance of the involvement of the human embodied dimension in life, not as a subsidiary adjunct but as a key player in life as we know it. It is clear that the position now is not 'How can the mind and the body be in contact - but rather how can the mind and the body be disentangled from each other? In these terms, dualism is history and has been sequentially disproved by the relentless search to understand the nature of the embodied human being.

The next development builds from these views and sees the creation of what Claxton (2010 p4) describes as an 'exciting new hybrid science' of embodied cognition. De Vega (2008) clarifies this by explaining that *embodied cognition* is a position in cognitive science and the philosophy of mind, emphasising the role that the body plays in shaping the mind. Furthermore, he explains that *embodied embedded* cognition is a position in cognitive science stating that intelligent behaviour emerges out of the interplay between brain, body and world.

This new hybrid science builds from the work of philosophers, cognitive scientist and neuroscientists and reinforces how monism is supported by complimentary notions such as having an 'essentially embodied existence' and in concepts such as 'enactivism'. Valera et al (1993) explain that the use of the term enactivism emphasises the growing conviction that cognition is not the representation of a pre-given world by a pre-given mind but is rather the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs. Clark entitled his book S*upersizing the Mind* (2001) and argues that cognition should be considered as permeating the human organism as a whole. In support of

these views Maiese (2016) refers to the 'Essentially embodied self' and Archer (2000) asserts that being human is characterised by the primacy of practice over consciousness and thought.

One of the outcomes of the accumulation of developing thinking about the nature of humans is the dismissal of a second form of dualism. This dualism relates to the general understanding that the environment and the individual as two 'free standing phenomena'. With the recurring assertion that humans create themselves as they interact with the world and that the environment 'comes into being' as a result of our interaction it can be argued that the environment and the individual are totally dependent on each other. In this respect Lewontin (in Varela 1993 p198) writes 'The environment is not an autonomous process but a reflection of the biology of the species. Just as there is no organism without an environment there is no environment without an organism'. This is endorsed by Varela (1993 p139) who expresses the view that 'This shift requires that we move away from the idea of the world as independent and extrinsic to the idea of the world as inseparable' from human embodied processes.' This notion brings us to the next topic of discussion around the importance of issues related to the primacy of movement and enabling environments.

The primacy of movement, physical literacy and enabling environments

Len drew the IPLA's attention to the primacy of movement as a concept that could support and develop the rationale for the importance of physical literacy. Two areas are discussed in more detail, firstly, the relationship between physical literacy, the primacy of movement, monism and embodiment and secondly, the primacy of movement and enabling environments.

Len through his exploration of the primacy of movement highlights how humans are essentially embodied and no more so is this evident than in the early stages of life where our innate intentionality compels us to explore the world through movement. Intentionality can be described as the innate human urge to relate to and be stimulated by our environment. In the early years these two areas can be linked to ontogenic development which occurs as a child matures as a result of genetics and can be considered as an outcome of nature. And phylogenetic development which occurs as a result of learning which is often environmentally dependant and an outcome of nurture.

In the early years there is a reciprocal relationship between ontological physical development and learning that supports physical competence. Growth opens up new possibilities for developing phylogenetic physical competence while increasing competence and therefore stimulates growth. In this way, at this stage, development and learned competence go hand in hand. Taking into consideration this reciprocal developmental relationship providing environments and experiences that stimulate and promote growth are essential. These enabling environments provide individuals with the opportunity to explore their embodied and movement potential through physical activity. When physical activity experiences are purposeful, engaging, relevant and rewarding they can be considered as meaningful. Meaningful movement and physical activity experiences are frequently referred to as being important in fostering physical literacy. Meaningful experiences could be characterised as

opportunities to develop and nurture the motivation, confidence, physical competence and knowledge and understanding required in order to engage in sustained physical activity for life.

Creating meaningful movement experiences that enable growth and development can also be connected with the development of affordances. Affordances are generally described as opportunities for action in the environment. There is a sense in which features in the world 'call for' a particular response. They invite involvement and engagement with the human embodied capability. In other words, features/objects present themselves as 'climbable' or 'requiring a certain amount of power or care in their handling'. Affordances are endowed on features in the world on account of having been involved in previous interaction. Once there has been contact with a feature, this experience becomes part of memory and is drawn on in future encounters. Affordances are not self-generating characteristics they arise from previous interaction.

The concept of affordances was initially proposed by Gibson (1979) but has been picked up and analysed by other writers (e.g. Sanders 1999) who proposes that individuals only respond to perceived affordances in situations that they choose to be the most desirable. Rietveld and Kiverstein (2014) argue for the need to widen the scope of affordances from a focus principally on features of the world to include all aspects of the socio-cultural context. It is interesting to note that the notion of affordances was an element of Merleau-Ponty's work (1968). He created the concept of The Chiasm to describe the intertwining of the human being with the world. In a sense this concept brings together the existential notion of interaction between the individual with the world, the embodied perceptual potentialities of the human, the characteristics of the world and indeed the exploration of affordances. It is a cycle that cannot be taken apart, as that which is understood about the world has been generated by characteristics of the embodied human being. We are through and through beings in the world and of the world, and the world we inhabit is the world we create.

Len was passionate about understanding innate human nature and how this can be harnessed and nurtured by creating conducive and enabling environments. The IPLA has developed an early years working group with Len's thinking and writing continuing to inform their work. Many of the members of this group were introduced to us by Len and they are intent on investigating the issues that Len highlighted for our attention.

Summary

This chapter has considered a range of issues raised by Len that arose on account of his interest in the primacy of movement. Important here are the holistic nature of the individual and the way that relationships with the environment are key to development. It would seem that there have been great strides in understanding the way that human beings draw on many of their capabilities to establish a rich and rewarding life.

There is an irony in the way that the detailed explanations that scientists are formulating issue in ever more new challenges. Having made a strong case for the importance of the role of human embodiment in much of life and beginning to understand the way that body and mind are mutually interdependent, the conundrum of the relationship between the lived body and the living body has reared its head. This is referred to as the mind-body-body problem. Maiese (2016 p5) attempts to unravel this and writes 'When we examine the lived body, our focus is on phenomenology; and when we examine the living body, the focus is on neurobiological processes of self-organisation and adaptive self- regulation. However, there is no sharp division between the lived body and the living body and this is because lived experience and sense-making (cognition) are essentially embodied, enactive, and rooted in the dynamics of certain types of living bodies.' There is still a great deal of work to do to understand the complexity of human life in all its richness. We guess that Len would have relished the challenge to think this through.

Len was aware that we live in exciting and changing times. In his diligence he identified many of these ongoing developments. He was fond of challenging quotations so we end with four, which have emerged from following up his ideas.

'Man is an *autopoetic* being. That is a being that creates itself' (Maiese, 2016 p14).

'So the self is nothing more and nothing less than a *dynamic, minded, living, essentially embodied process – in effect a life form or a form of life'* (Maiese, 2016 p xiii).

'The common upshot of all these arguments, then, is a kind of principled body centrism, according to which the presence of humanlike minds depends quite directly on the possession of a human-like body' (Clark, 2011 p155).

'Philosophy itself also turns out to be very different from what we thought before. Instead of being an activity of pure reason, it is an activity of an embodied reason' (Lakoff and Johnson, 1999 p540).

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